

CITY OF MONROE EMPLOYEES RETIREMENT SYSTEM

SEVENTY-FIRST ANNUAL ACTUARIAL VALUATION DECEMBER 31, 2015

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June 7, 2016

The Board of Trustees City of Monroe Employees Retirement System Monroe, Michigan

Dear Board Members:

Submitted in this report are the results of the Seventy-First Annual Actuarial Valuation of the City of Monroe Employees Retirement System. The date of the valuation was December 31, 2015.

This report was prepared at the request of the Board and is intended for use by the Retirement System and those designated or approved by the Board. This report may be provided to parties other than the System only in its entirety and only with the permission of the Board.

The purpose of the valuation is to measure the System's funding progress and to determine the employer contribution rate for the fiscal year beginning July 1, 2017.

Please see the following page for additional disclosures required by the Actuarial Standards of Practice. To the best of our knowledge, this report is complete and accurate and the valuation was conducted in accordance with standards of practice prescribed by the Actuarial Standards Board and in compliance with the applicable state statutes.

To the best of our knowledge, this report is complete and accurate and the valuation was conducted in accordance with standards of practice prescribed by the Actuarial Standards Board and in compliance with the applicable state statutes. Mark Buis and James D. Anderson are Members of the American Academy of Actuaries (MAAA) who meet the Qualification Standards of the American Academy of Actuaries to render the actuarial opinions contained herein. It is our opinion that the actuarial assumptions used for the valuation are reasonable.

Respectfully submitted,

Mark Buis, FSA, EA, MAAA

James D. anclesson

James D. Anderson, FSA, EA, MAAA

MB/JDA:bd

Additional Disclosures Required by Actuarial Standards of Practice

Future actuarial measurements may differ significantly from the current measurements presented in this report due to such factors as the following: plan experience differing from that anticipated by the economic or demographic assumptions; changes in economic or demographic assumptions; increases or decreases expected as part of the natural operation of the methodology used for these measurements (such as the end of an amortization period or additional cost or contribution requirements based on the plan's funded status); and changes in plan provisions or applicable law. Due to the limited scope of this assignment, we did not perform an analysis of the potential range of future measurements.

The funded ratio reported in this valuation is not appropriate for assessing the sufficiency of plan assets to cover the estimated cost of settling the plan's benefit obligations.

The funded ratio is not appropriate for assessing the need for or amount of future contributions.

The funded ratio would be different if based on the market value of assets.

The contribution allocation procedure including the amortization period and method is set by the Board. The computed contribution rates shown on page A-1 may be considered as minimum contribution rates which comply with the Board's funding policy. Users of this should be aware that contributions made at those rates do not guarantee benefit security. Given the importance of benefit security to any retirement system, we suggest that contributions to the system in excess of those presented in this report be considered.

This report should not be relied on for any purpose other than the purpose described in the primary communication.

The signing actuaries are independent of the plan sponsor.

The valuation was based upon information, furnished by the City, concerning Retirement System benefits, financial transactions, and individual active members, terminated members, retirees and beneficiaries. We checked for internal and year-to-year consistency, but did not audit the data. We are not responsible for the accuracy or completeness of the information provided. This information is summarized in Section B.

Valuation results, comments and conclusion are contained in Section A.

This report relies on the actuarial cost methods and assumptions which are summarized in Section C.

SECTION A

VALUATION RESULTS, COMMENTS, RECOMMENDATIONS AND CONCLUSION

FUNDING OBJECTIVE

The funding objective of the Retirement System is to establish and receive contributions, expressed as percents of active member payroll, which will remain approximately level from year to year and will not result in intergenerational cost transfers. This objective is stated in the Retirement System Ordinance and meets the requirements of the Constitution of the State of Michigan.

CONTRIBUTION RATES

The Retirement System is supported by member contributions, City contributions and investment return from Retirement System assets.

Contributions which satisfy the funding objective are determined by the annual actuarial valuation and are sufficient to:

- (1) cover the actuarial costs allocated to the current year by the actuarial cost methods described in Section C (the normal cost); and
- (2) finance over a period of future years the actuarial costs not covered by present assets and anticipated future normal costs (unfunded actuarial accrued liability).

Computed Contributions for the fiscal year beginning July 1, 2017 are shown on page A-2.

City's Contributions Expressed as Percents of Active Member Payroll - Weighted Averages

Contributions for	General Members	Police Members	Fire Members	Hybrid Members	Total
Total Normal Cost	14.40 %	18.32 %	19.57 %	9.24 %	14.42 %
Member Contributions	(4.09)%	(5.39)%	(5.46)%	(3.75)%	(4.52)%
Employer Normal Cost	10.31 %	12.93 %	14.11 %	5.49 %	9.90 %
Amortization Amounts*	(34.66)%	16.88 %	56.95 %	(1.99)%	7.84 %
Employer Contribution Rate	0.00 %	29.81 %	71.06 %	3.50 %	17.74 %
Estimated Dollar Contribution	\$0	\$911,999	\$796,850	\$121,802	\$1,830,651

^{*} The Unfunded Accrued Liability is amortized over a period of 24 years.

These amounts are for pension contributions only. Effective 1/1/2000, the Board decided that a minimum contribution rate of 4% per valuation group would be contributed to the Post-Retirement Health Care Fund.

All members of the Retirement System except police officers and firefighters are covered by Social Security. Social Security taxes are not included in the above amounts.

CITY'S COMPUTED CONTRIBUTIONS FOR THE FISCAL YEAR BEGINNING JULY 1, 2017 (CONCLUDED)

Determining Dollar Contributions

For any period of time, the percent-of-payroll contribution rate needs to be converted to dollar amounts. We recommend one of the following procedures.

- (1) Contribute dollar amounts at the end of each payroll period which are equal to the City's percent-of-payroll contribution requirement multiplied by the covered active member payroll for the period. Adjustments should be made as necessary to exclude items of pay that are not covered compensation for Retirement System benefits and to include non-payroll payments that are covered compensation.
- (2) Contribute the annual amounts to the designated fund from the following schedule:

Group	Pensi	on Fund
General	\$	0
Police	91	1,999
Fire	79	96,850
Hybrid	12	21,802
Total	\$ 1,83	30,651

These dollar amounts are derived by multiplying the City's percent-of-payroll contribution requirement by the projected valuation payroll for the fiscal year beginning July 1, 2017. The projected valuation payroll reflects the pay increase assumptions described on page C-8.

The above amounts (Methods 1 and 2) are assumed to be contributed, on average, halfway through the fiscal year. If contributions are made on a later schedule, interest should be added at the rate of 0.625% (=0.075 \div 12) for each month of delay.

CITY'S COMPUTED CONTRIBUTIONS - COMPARATIVE SCHEDULE

				A	As Perc	ents of Valu	uation P	ayroll						
Fiscal	Valuation			Police a	and	Wate	r	Sewag	e					
Year	Date		General	Fire		Dept		Dispos	al	Hybri	d	Valuation	Employer C	ontribution
July - June	December 3	1	Members	Membe	ers	Membe	ers	Membe	rs	Membe	rs	Payroll	Computed	Actual
1987-88	1986		10.34 % (1)	12.70 %	(1)	12.54 %	(1)	9.91 %	(1)			\$ 6,898,835	\$ 836,738	\$ 836,738
1988-89	1987		10.03 % (1,4)	12.62 %		13.07 %	(1)	9.40 %	(1,4)			7,082,224	850,875	850,875
1989-90	1988		8.39 % (1,4)	12.07 %		13.82 %	(1)	11.77 %	(1,4)			7,827,433	895,701	895,701
1990-91	1989		4.20 % (1,4)	13.43 %	(1,4)	13.00 %	(1,4)	9.35 %	(1,4)			7,787,845	791,566	791,566
1991-92	1990 (2	2)	5.48 % (4)	9.24 %		10.64 %		7.78 %	(4)			9,106,876	737,022	737,021
1992-93	1991		5.00 % (4,5)	5.45 %	(4)	11.11 %		6.03 %	(4)			8,817,472	551,961	551,961
1993-94	1992		5.00 % (4,5)	5.00 %	(4,5)	10.45 %		6.61 %	(4)			9,354,039	565,293	565,293
1993-94	1992 (2	2)	5.00 %	5.00 %		9.36 %		5.40 %				9,354,039	536,817	565,293
1994-95	1993		5.00 %	5.00 %		7.13 %		5.00 %				9,190,716	462,980	520,675
1994-95	1993 (1)	5.00 % (4,5)	5.00 %	(4,5)	7.55 %		5.00 %	(4,5)			9,190,716	520,675	520,675
1995-96	1994		4.00 % (4,5)	4.00 %	(4,5)	5.07 %		4.00 %	(4,5)			9,651,905	425,850	425,850
1996-97	1995 (1)	4.00 % (4,5)	4.00 %	(4,5)	4.00 %	(4,5)	4.00 %	(4,5)			9,978,002	417,297	417,297
1997-98	1996		4.00 % (4,5)	4.00 %	(4,5)	4.00 %	(4,5)	4.00 %	(4,5)			10,172,609	317,709	317,709
1998-99	1997 (1)	4.00 % (4,5)	4.00 %	(4,5)	4.00 %	(4,5)	4.00 %	(4,5)	4.00 %	(4,5)	10,529,011	440,112	547,316
1999-00		1)	4.00 % (4,5)	4.00 %	(4,5)					4.00 %	(4,5)	10,584,002	442,412	426,131
2000-01	1999 (1)	0.00 % (4,5)	0.00 %	(4,5)					0.32 %	(4,5)	10,474,156	3,790	11,596
2001-02	2000 (1)	0.00 % (4,5)	0.00 %	(4,5)					3.61 %	(4,5)	11,856,866	67,664	0
2002-03	2001 (1)	0.00 % (4,5)	0.00 %	(4,5)					0.00 %	(4,5)	11,906,969	0	0
2003-04	2002	1,2)	0.00 % (4,5)	0.00 %	(4,5)					0.00 %	(4,5)	12,514,944	0	0
2004-05	2003		0.00 % (4,5)	0.00 %	(4,5)					0.00 %	(4,5)	12,572,732	0	0
2005-06	2004		0.00 % (4,5)	8.28 %	(4,5)					0.00 %	(4,5)	13,015,919	479,028	479,028
2006-07	2004 (1)	0.00 % (4,5)	8.28 %	(4,5)					0.00 %	(4,5)	13,232,960	487,016	487,368
2007-08	2005	1)	0.00 % (4,5)	21.31 %	(4,5)					5.21 %	(5)	13,232,960	1,444,879	1,444,880
2008-09	2006		0.00 % (4,5)	20.95 %	(5)					5.07 %	(5)	13,007,162	1,439,268	1,439,269
2009-10	2007		0.00 % (4,5)	20.92 %	(5)					4.80 %	(5)	13,371,922	1,483,539	1,483,539
2010-11	2008 (2	2)	0.00 % (4,5)	20.49 %	(1,5)					2.74 %	(5)	11,289,204	1,191,553	1,191,553
2011-12		2)	0.00 % (4,5)	22.67 %	(5)					3.48 %	(5)	11,061,644	1,274,568	1,274,568
2012-13	2010		0.00 % (4,5)	25.04 %	(5)					3.83 %	(5)	10,758,097	1,351,541	1,351,541
2013-14	2011		0.00 % (4,5)	36.24 %	(5)					3.87 %	(5)	9,636,542	1,488,154	1,488,054
2014-15	2012		0.00 % (4,5)	38.86 %						4.12 %	(5)	9,543,247	1,622,379	1,622,379
2015-16	2013		0.00 % (4,5)	40.36 %	(5)					4.07 %	(5)	9,524,423	1,695,874	1,695,874
2016-17	2014		0.00 % (4,5)	45.25 %	(5)					4.06 %	(5)	9,207,491	1,845,799	, ,
2017-18	2015		0.00 % (4,5)	40.87 %						3.50 %		9,469,543	1,830,651	

⁽¹⁾ After Retirement System amendments.

⁽²⁾ After assumptions revised.

⁽³⁾ After change in valuation method to Entry-Age Normal Cost.

⁽⁴⁾ Reflects Temporary (Credit)/Charge.

⁽⁵⁾ Minimum Contribution Rate per Board Resolution.

[#] Scheduled contributions for the fiscal year.

PRESENT VALUE OF FUTURE BENEFITS AND ACCRUED LIABILITIES

	General Members	Police Members	Fire Members	Hybrid Members	Total
A. Accrued Liability					
1. For retirees and beneficiaries	\$41,779,906	\$27,156,064	\$32,149,054	\$1,139,064	\$102,224,088
2. For vested terminated members	456,775	-	643,648	341,933	1,442,356
3. For present active members					
a. Value of expected future benefit payments	15,587,255	16,481,271	6,081,325	6,269,955	44,419,806
b. Value of future normal costs	2,003,822	4,546,607	1,698,600	2,425,630	10,674,659
c. Active member accrued liability: (a) - (b)	13,583,433	11,934,664	4,382,725	3,844,325	33,745,147
4. Total accrued liability	55,820,114	39,090,728	37,175,427	5,325,322	137,411,591
B. Present Assets (Funding Value)	69,003,853	31,155,359	27,224,854	6,352,821	133,736,887
C. Unfunded Accrued Liability: (A.4) - (B)	(13,183,739)	7,935,369	9,950,573	(1,027,499)	3,674,704
D. Funding Ratio: (B) / (A.4)	123.6%	79.7%	73.2%	119.3%	97.3%
E. Funded Ratio - Market Value Basis	119.9%	77.3%	71.1%	115.7%	94.4%

FUNDING PROGRESS TESTS

The Retirement System's funding objective is to meet long-term benefit promises through contributions that remain approximately level from year to year as a percent of active member payroll. If the contributions to the System are level in concept and soundly executed, the System will *pay all promised benefits when due -- the ultimate test of financial soundness*.

There is no single all-encompassing test to measure a Retirement System's funding progress and current funded status.

A traditional measure has been the relationship of valuation assets to actuarial accrued liabilities - a method that is influenced by the choice of actuarial cost method. This relationship is shown on page A-5.

We believe a better understanding of funding progress and status can be achieved using the following measures which are independent of the actuarial funding method. A year-by-year comparison of these measures is shown on page A-6 right.

TEST 1 - The ratio of valuation assets to the actuarial present value of vested benefits (APVVB) computed as if the Retirement System were terminated on the valuation date - a plan termination test. The ratio is expected to gradually increase in the absence of benefit improvements and changes in actuarial assumptions.

TEST 2 - *The ratio of valuation assets to the actuarial present value of credited projected benefits (APVCPB)* - a plan continuation test. The ratio is expected to gradually increase in the absence of benefit improvements and changes in actuarial assumptions.

TEST 3 - The ratio of the unfunded actuarial present value of credited projected benefits (UAPVCPB) to member payroll - a plan continuation test. In a soundly financed retirement system, the amount of the unfunded actuarial present value of credited projected benefits will be controlled and prevented from increasing in the absence of benefit improvements or strengthening of actuarial assumptions. However, in an inflationary environment it is seldom practical to impose this control on dollar amounts which are depreciating in value. The ratio is a relative index of condition where inflation is present in both items. The ratio is expected to gradually decrease in the absence of benefit improvements and changes in actuarial assumptions.

FUNDING PROGRESS MEASURES - COMPARATIVE SCHEDULE (\$ AMOUNTS IN THOUSANDS)

Valuation	(1)	(2)				Termination	Continua	tion Toota
Valuation Date December 31	(1) Valuation Assets	(2) Member Payroll	(3) APVVB	(4) APVCPB	(5) UAPVCPB	Measure TEST 1 (1) ÷ (3)	TEST 2 (1) ÷ (4)	$\frac{\text{TEST 3}}{\text{(5)} \div \text{(2)}}$
1988(1)	\$ 27,163	\$ 7,827	\$ 17,445	\$ 25,838	\$ (1,325)	155.7 %	105.1 %	-
1989(1)	31,228	7,787	19,316	28,887	(2,341)	161.7 %	108.1 %	_
1990(2)	34,603	9,107	21,491	31,119	(3,484)	161.0 %	111.2 %	-
1991	39,320	8,817	22,899	32,949	(6,371)	171.7 %	119.3 %	-
1992(3)	43,834	9,354	25,639	36,882	(6,952)	171.0 %	118.8 %	-
1993(1,2)	49,703	9,191	28,481	38,633	(11,070)	174.5 %	128.7 %	_
1994	54,055	9,652	31,254	42,409	(11,646)	173.0 %	127.5 %	-
1995(1)	59,462	9,978	33,285	45,707	(13,755)	178.6 %	130.1 %	-
1996	65,597	10,173	34,719	48,508	(17,089)	188.9 %	135.2 %	-
1997(1)	72,727	10,529	42,155	54,843	(17,884)	172.5 %	132.6 %	-
1998	83,049	10,584	42,305	55,146	(27,903)	196.3 %	150.6 %	_
1999(1)	94,155	10,474	45,827	58,143	(36,012)	205.5 %	161.9 %	-
2000(1)	104,266	11,857	50,310	64,229	(40,037)	207.2 %	162.3 %	-
2001(1)	110,126	11,907	53,161	67,124	(43,002)	207.2 %	164.1 %	-
2002(1,2)	110,362	12,515	59,278	76,417	(33,945)	186.2 %	144.4 %	-
2003	110,752	12,573	64,316	81,705	(29,047)	172.2 %	135.6 %	-
2004	111,524	13,016	72,927	93,215	(18,309)	152.9 %	119.6 %	-
2005(1,3)	118,935	13,233	77,866	97,222	(21,713)	152.7 %	122.3 %	-
2006	124,033	13,007	83,477	100,726	(23,307)	148.6 %	123.1 %	-
2007	130,366	13,372	87,361	106,681	(23,685)	149.2 %	122.2 %	-
2008(1,2,3)	130,512	11,289	95,032	111,661	(18,851)	137.3 %	116.9 %	-
2009(2)	131,184	11,062	99,789	115,213	(15,971)	131.5 %	113.9 %	-
2010	132,119	10,758	105,476	119,415	(12,704)	125.3 %	110.6 %	-
2011	131,234	9,637	111,010	124,343	(6,891)	118.2 %	105.5 %	-
2012	130,063	9,543	113,438	126,541	(3,522)	114.7 %	102.8 %	-
2013	130,300	9,524	116,527	128,719	(1,581)	111.8 %	101.2 %	-
2014	130,057	9,207	123,494	132,530	2,473	105.3 %	98.1 %	26.9 %
2015	133,737	9,470	125,818	133,862	125	106.3 %	99.9 %	1.3 %

⁽¹⁾ After Retirement System amendments.

APVVB - actuarial present value of vested benefits (see page A-6 Left).

APVCPB - actuarial present value of credited projected benefits (see page A-6 Left).

UAPVCPB - unfunded actuarial present value of credited projected benefits (see page A-6 Left).

⁽²⁾ Economic assumptions revised.

⁽³⁾ Asset valuation method revised.

DEVELOPMENT OF FUNDING VALUE OF ASSETS

Year Ended December 31	2013	2014	2015	2016	2017	2018	2019	2020	2021
A. Funding Value Beginning of Year	\$130,063,087	\$130,299,553	\$130,057,135						
B. Market Value End of Year	135,144,666	135,893,438	129,753,467						
C. Market Value Beginning of Year	121,436,535	135,144,666	135,893,438						
D. Non-Investment Net Cash Flow	(6,400,766)	(6,576,418)	(6,711,084)						
E. Investment Income									
E1. Market Total: B-C-D	20,108,897	7,325,190	571,113						
E2. Amount for Immediate Recognition (7.5%)	9,514,703	9,525,851	9,502,619						
E3. Amount for Phased-In Recognition: E1-E2	10,594,194	(2,200,661)	(8,931,506)						
F. Phased-In Recog. of Investment Return									
F1. Current Year: (1/7) x E3	1,513,456	(314,380)	(1,275,929)						
F2. First Prior Year	402,333	1,513,456	(314,380)	\$ (1,275,929)					
F3. Second Prior Year	(1,270,098)	402,333	1,513,456	(314,380)	\$ (1,275,929)				
F4. Third Prior Year	523,430	(1,270,098)	402,333	1,513,456	(314,380)	\$ (1,275,929)			
F5. Fourth Prior Year	1,309,406	523,430	(1,270,098)	402,333	1,513,456	(314,380)	\$ (1,275,929)		
F6. Fifth Prior Year	(5,355,998)	1,309,406	523,430	(1,270,098)	402,333	1,513,456	(314,380)	\$ (1,275,929)	
F7. Sixth Prior Year	0	(5,355,998)	1,309,405	523,430	(1,270,101)	402,335	1,513,458	(314,381)	\$ (1,275,932)
F8. Total Recognized Investment Gain	(2,877,471)	(3,191,851)	888,217	(421,188)	(944,621)	325,482	(76,851)	(1,590,310)	(1,275,932)
G. Funding Value End of Year A+D+E2+F8	130,299,553	130,057,135	133,736,887						
H. Difference between Market & Funding Value	4,845,113	5,836,303	(3,983,420)	(3,562,232)	(2,617,611)	(2,943,093)	(2,866,242)	(1,275,932)	0
I. Recognized Rate of Return	5.2%	5.0%	8.2 %						
J. Market Rate of Return	17.0%	5.6%	0.4%						
K. Ratio of Funding Value to Market Value	96.4%	95.7%	103.1 %						

The Funding Value of Assets recognizes assumed investment return (line E2) fully each year. Differences between actual and assumed investment return (line E3) are phased-in over a closed 7-year period. During periods when investment performance exceeds the assumed rate, Funding Value of Assets will tend to be less than market value. During periods when investment performance is less than the assumed rate, Funding Value of Assets will tend to be greater than market value. The Funding Value of Assets is *unbiased* with respect to Market Value. At any time it may be either greater or less than Market Value. If assumed rates are exactly realized for 6 consecutive years, it will become equal to Market Value.

DERIVATION OF EXPERIENCE GAIN (LOSS) YEAR ENDED DECEMBER 31, 2015

The actuarial gains or losses realized in the operation of the Retirement System provide an experience test. Gains and losses are expected to cancel each other over a period of years but sizable year to year fluctuations are common. Detail on the derivation of the actuarial gain (loss) is shown below, along with a year-by-year comparative schedule.

(1)	UAAL* at end of prior year	\$6,180,689
(2)	Total normal cost	1,398,652
(3)	Actual contributions	2,120,309
(4)	Interest accrual	436,979
(5)	Expected UAAL before changes	5,896,011
(6)	Change from Retirement System amendments and/or revised actuarial assumptions/methods	0
(7)	Expected UAAL after changes	5,896,011
(8)	Actual UAAL at end of year	3,674,704
(9)	Gain (loss) (7) - (8)	2,221,307
(10)	Gain (loss) as percent of actuarial accrued liabilities at start of year (\$136,237,824)	1.6%

^{*} Unfunded actuarial accrued liability.

Date December 31	Actuarial Gain (Loss) as % of Beginning Accrued Liability
2006	2.0 %
2007	0.3 %
2008	(8.0)%
2009	(2.9)%
2010	(3.0)%
2011	(4.8)%
2012	(2.6)%
2013	(1.6)%
2014	(3.2)%
2015	1.6 %

COMMENTS, RECOMMENDATIONS AND CONCLUSION DECEMBER 31, 2015

COMMENT A: Contribution requirements varied by group. The plan is approximately 97.3% funded on a system-wide basis. Total contribution requirements decreased primarily due to the phasing-in of past favorable investment performance. Shown below are the contribution requirements from last year's valuation compared to this year's valuation.

		Employer Co	ntribu	tion for						
		Fiscal Year Beginning								
	Ju	ıly 1, 2016	y 1, 2016 July 1, 2017							
General	\$	-	\$	-						
Police		926,616		911,999						
Fire		788,227		796,850						
Hybrid		130,956		121,802						
Total	\$	1,845,799	\$	1,830,651						

COMMENT B: On a market value basis, investment results were less favorable than expected, with approximately a 0.4% rate of return (see page A-7). However, under the asset valuation method, investment gains and losses are spread over a 7-year period. Partial recognition of this year's loss was combined with the continued phase-in of investment gains and losses from prior years resulting in a net recognized rate of return of 8.2%, leading to an overall asset gain on the actuarial value of assets. The overall experience gain (loss) this year (including liability gains and losses) was \$2,221,307 (see page A-8).

COMMENT C: As of this valuation, the Funding Value of assets exceeds the Market Value by \$4.0 million. This means that currently there is \$4.0 million in investment losses yet to be recognized. The deferred losses will be phased-in over the next six years and amortized. If the Market Value had been used this year, the funded status would be about 94.4% instead of 97.3%.

COMMENT D: An Experience Study to review the actuarial assumptions will be issued in a separate report. Proposed changes to actuarial assumptions will be effective with the December 31, 2016 actuarial valuation.

COMMENTS, RECOMMENDATIONS AND CONCLUSION DECEMBER 31, 2015

RECOMMENDATION: The actuary recommends that transfers be made from the reserve for employer contributions to the reserve for retired benefit payments, as shown below:

Reserve for Employer Contributions

	Amounts Transferred to									
_	Balance Before Transfer	Reserve for Retired Benefit Payments	Balance After Transfer							
General	\$19,232,024	\$ (2,328,177)	\$ 21,560,201							
Police & Fire	(2,364,115)	3,900,782	(6,264,897)							
Hybrid _	1,924,222	(1,191,128)	3,115,350							
Total	\$18,792,131	\$ 381,477	\$ 18,410,654							

The computed employer contribution rates developed in this report assume that these transfers have been made.

The table above shows appropriate beginning reserve balances at 1/1/2016 for each valuation group.

CONCLUSION: The Retirement System continues to operate in accordance with the actuarial principles of level percent of payroll financing.

ACTUARIAL BALANCE SHEET - DECEMBER 31, 2015 (\$ AMOUNTS IN THOUSANDS)

Present Resources and Expected Future Resources

	General Members	Police Members	Fire Members	Hybrid Members	Total
A. Actuarial value of system assets					
1. Net assets from system financial					
statements	\$66,949	\$30,227	\$26,414	\$6,164	\$129,754
2. Market value adjustment	2,055	928	811	189	3,983
3. Actuarial value of assets	69,004	31,155	27,225	6,353	133,737
B. Actuarial present value of expected future employer contributions					
1. For normal costs	1,428	3,112	1,201	1,379	7,120
2. For unfunded actuarial accrued					
liabilities	(13,184)	7,935	9,951	(1,027)	3,675
3. Total	(11,756)	11,047	11,152	352	10,795
C. Actuarial present value of expected					
future member contributions	576	1,436	498	1,046	3,556
D. Total Present and Expected Future					
Resources	\$57,824	\$43,638	\$38,875	\$7,751	\$148,088
Actuarial Present Pay	t Value of E ments and	-		enefit	

A. To retirants and beneficiaries	\$41,780	\$27,156	\$32,149	\$1,139	\$102,224
B. To vested terminated members	457	0	644	342	1,443
C. To present active members1. Allocated to service rendered					
prior to valuation date 2. Allocated to service likely to	13,583	11,935	4,383	3,844	33,745
be rendered after valuation date	2,004	4,547	1,699	2,426	10,676
3. Total	15,587	16,482	6,082	6,270	44,421
D. Total Actuarial Present Value of					
Expected Future Benefit payments	57,824	43,638	38,875	7,751	148,088
E. Total Actuarial Present Value of					
Expected Future Payments and Reserves	\$57,824	\$43,638	\$38,875	\$7,751	\$148,088

Note: Not all sums balance due to rounding.

ir —	
**	Projected Benefit
Year	Payment
2016	\$ 9,323,330
2017	9,575,153
2018	9,813,826
2019	10,072,926
2020	10,368,780
2021	10,648,929
2022	10,907,914
2023	11,167,247
2024	11,461,417
2025	11,772,589
2026	12,114,366
2027	12,441,224
2028	12,712,177
2029	12,944,945
2030	13,140,854
2031	13,323,467
2032	13,425,147
2033	13,529,404
2034	13,576,682
2035	13,558,921

SECTION B

SUMMARY OF BENEFIT PROVISIONS AND VALUATION DATA

BRIEF SUMMARY* OF NON-HYBRID BENEFIT PROVISIONS DECEMBER 31, 2015

REGULAR RETIREMENT (no reduction factor for age): The eligibility conditions and benefit factors for regular retirement are shown on page B-5.

EARLY RETIREMENT

Eligibility - Teamsters Local 214 and COMEA Unit I and II: Age 50 with 10 or more years of service.

Annual Amount - Actuarial equivalent of the accrued Regular Retirement benefit.

DEFERRED RETIREMENT (vested benefit):

Eligibility - 10 or more years of service. Benefit begins at age 60.

Annual Amount - Computed as a regular benefit but based upon service and final average compensation at time of termination.

DUTY DISABILITY RETIREMENT:

Eligibility - No age or service requirements. Must be in receipt of worker's compensation.

Annual Amount - Computed as a regular retirement. If a retirant is paid a worker's compensation benefit which is more than the difference between the retirant's final average compensation and the amount of retirement allowance computed the amount of the retirement allowance shall be reduced to the amount which is the difference between final average compensation and the worker's compensation benefit. The reduction shall continue for the worker's compensation period. Upon termination of worker's compensation or attainment of age 65, whichever occurs first, additional service credit is granted and the benefit is recomputed.

NON-DUTY DISABILITY RETIREMENT:

Eligibility - 10 or more years of service.

Annual Amount - Computed as a regular retirement.

DUTY DEATH BEFORE RETIREMENT:

Eligibility - No age or service requirements.

Annual Amount - Refund of member contributions paid at time of death. A benefit equal to the worker's compensation benefit is paid beginning at the end of the worker's compensation period. Payments to spouse terminate upon remarriage or death.

^{*} In case of disagreement between this summary and either City ordinance or labor agreements, the latter supersedes.

BRIEF SUMMARY* OF NON-HYBRID BENEFIT PROVISIONS DECEMBER 31, 2015 (CONCLUDED)

NON-DUTY DEATH BEFORE RETIREMENT:

Eligibility - 10 years of service.

Annual Amount - Computed according to the regular retirement formula but actuarially reduced in accordance with Joint and 100% Survivor option.

MEMBER CONTRIBUTIONS: Vary by employment unit as shown on page B-5.

ANNUITY WITHDRAWAL: Annuity withdrawal is not available to persons hired January 1, 1989 and later. Members of the police and fire units of the City may withdraw their accumulated contributions at the time of retirement. The retirement allowances of such members will be reduced in accordance with the interest and mortality assumptions (50% Unisex Mix) used in calculating option factors as of December 31, preceding the date of retirement.

OPTIONAL FORMS OF BENEFIT PAYMENT:

Option A - Straight life retirement allowance

Option B - 100% survivor allowance

Option C - 50% survivor allowance

Option D 120 - 120 months certain and life

Option D 180 - 180 months certain and life

Option E - Members electing early retirement may choose to have the formula amount payable to age 62 (if possible) and a reduced amount thereafter. Option E cannot be elected in conjunction with another option, and does not provide a survivor benefit.

Social Security Coordination - Members covered by Social Security may elect to receive their benefit paid in a form that pays more initially but reduces at age 65 by the amount of the estimated Social Security P.I.A.

Benefit amounts under these optional forms of payment are calculated using a unisex mortality table consisting of 90% male mortality rates and 10% female rates.

^{*} In case of disagreement between this summary and either City ordinance or labor agreements, the latter supersedes.

BRIEF SUMMARY* OF HYBRID BENEFIT PROVISIONS (THAT BECAME EFFECTIVE MAY 1, 1997) DECEMBER 31, 2015

REGULAR RETIREMENT (no reduction for age):

Eligibility - Age 60 with 10 or more years of service or age 62 with 3 or more years of service.

Benefits -

- (1) Monthly Benefit Option equal to the greater of (a) and (b):
 - (a) 1.5% times Final Average Compensation (FAC) times service, plus Cost-of-Living Adjustment (COLA).
 - (b) Annuitized Value of 2.0 times member contributions with interest plus COLA.
- (2) Lump Sum Option equal to 1.5 times member contributions with interest.

EARLY RETIREMENT:

Eligibility - Age 55 with 15 or more years of service.

Benefits -

(1) *Monthly Benefit Option* equal to the annuitized value of 1.5 times member contributions with interest plus COLA.

DEFERRED RETIREMENT (vested benefit):

Eligibility - 3 or more years of service. No age requirement.

Benefits - Immediate Option equal to a lump sum distribution in accordance with the following:

Years of Service	Immediate Lump Sum
Less than 3	1.0 times member contributions with interest
At least 3, but less than 7	1.25 times member contributions with interest
7 or more	1.5 times member contributions with interest

OR

Deferred Option: Member can leave own contributions and the credited interest on them in the plan to earn additional interest until retirement, then elect either the Monthly Benefit Option or the Lump Sum Option described under Regular Retirement.

^{*} In case of disagreement between this summary and either City ordinance or labor agreements, the latter supersedes.

BRIEF SUMMARY* OF HYBRID BENEFIT PROVISIONS THAT BECAME EFFECTIVE MAY 1, 1997 DECEMBER 31, 2015

DISABILITY RETIREMENT (the same provisions apply to duty and non-duty disabilities):

Eligibility - No age or service requirements.

Benefits - Payable in accordance with the following:

Years of Service	Benefit Payable (includes COLA)
Less than 3	1.0% times FAC times Service
At least 3, but less than 7	1.25% times FAC times Service
7 or more	1.5% times FAC times Service

DEATH BEFORE RETIREMENT:

Eligibility - No age or service requirements.

Benefits - 1.0 times member contribution with interest is payable to the deceased member's beneficiary. In addition, if the member had at least 3 years of service at death, the beneficiary will receive the greater of (a) and (b):

- (a) If monthly worker's compensation benefits were being paid prior to the member's death, the Retirement System will continue to pay the same amount to the beneficiary on a monthly basis.
- (b) A life annuity to the beneficiary of 1.5% times the member's FAC (just prior to death) times service.

Note: The monthly amounts from (a) and (b) include COLAs.

RETIREES' BURIAL BENEFIT:

Eligibility - The death of a member who is receiving monthly retirement benefits.

Benefits - A one-time cash payment of \$2,500.

SPECIAL NOTES:

COLAs - The percent increase in the CPI up to 2%.

Interest on Member Contributions - The annual rate of return on the market value of the Fund-1%.

* In case of disagreement between this summary and either City ordinance or labor agreements, the latter supersedes.

BENEFIT PROVISIONS BY UNIT DECEMBER 31, 2015

				FA	C ⁽¹⁾	Retiro	ement	
		GRS		Months	Lump	Ben		Employee
Unit Name	No.	Code	Eligibility	In	Sums	PCT	COLA ⁽²⁾	Contrib.
General Unit I	12	11	55 & 25, 60 & 10 or 65 & 5	36	Y	2.2%	2% Fixed	4%
General Unit II	2	36	55 & 25, 60 & 10, 65 & 5	36	Y	2.2%	2% CPI	4%
General Teamsters	6	19	60 & 10, 65 & 5, 80 pts	48	Y	2.2%	2% Fixed	5%
Water Unit I	2	14	55 & 25, 60 & 10 or 65 & 5	36	Y	2.2%	2% Fixed	4%
Water Unit II	1	37	55 & 25, 60 & 10, 65 & 5	36	Y	2.2%	2% CPI	4%
Water Teamsters	6	15	60 & 10, 65 & 5, 80 pts	48	Y	2.2%	2% Fixed	5%
Sewage Unit 1	3	17	55 & 25, 60 & 10 or 65 & 5	36	Y	2.2%	2% Fixed	4%
Sewage Unit II	1	38	55 & 25, 60 & 10, 65 & 5	36	Y	2.2%	2% CPI	4%
Sewage Teamsters	4	16	60 & 10, 65 & 5, 80 pts	48	Y	2.2%	2% Fixed	5%
Police Patrol	16	22	50 & 25, 55 & 10, or 60 & 5	36	Y (4)	2.65% (80% cap)	3% CPI	5.5%
Police Patrol (Hired on or After 7/1/2008)	15	22	55 & 10, or 60 & 5	36	N	2.0%/2.25% ⁽⁵⁾ (80% cap)	2% CPI	5.5%
Police Command	9	23	50 & 25, 55 & 10, or 60 & 5	36	Y (3)	2.65% (80% cap)	3% CPI	5.5%
Police Command (Hired on or After 7/1/2008)	0	23	55 & 10, or 60 & 5	36	N	2.0%/2.25% ⁽⁵⁾ (80% cap)	2% CPI	5.5%
Fire	10	33	50 & 25, 55 & 10, or 60 & 5	36	Y (3)	2.65% (80% cap)	3% CPI	5.5%
Fire (Hired on or After 7/1/2008)	5	33	55 & 10, or 60 & 5	36	N	2.0%/2.25% ⁽⁵⁾ (80% cap)	2% CPI	5.5%
Appointed/Confidential	3	35	55 & 15, 60 & 10, 65 & 5	36	Y	2.2%	2% Fixed	2%
Elected	0	34	55 & 25, 60 & 10, 65 & 5	36	Y	2.2%	No	2%
Appointed/Elected Hybrid	11	50+	60 & 10 or 62 & 3	36	Y	1.5%	2% CPI	2%
Hybrid	57	50+	60 & 10 or 62 & 3	36	Y	1.5%	2% CPI	4%

Total Active Members 163

⁽¹⁾ Final Average Compensation. The benefit multiplier times FAC times credited service is the amount of retirement allowance payable. For Police and Fire members hired prior to 7/1/2008, FAC is frozen at 30.2 years of service. For Police and Fire members hired on or after 7/1/2008, FAC is frozen at 37.2 years of service.

Cost-of-Living Adjustments (COLAs) apply beginning on the anniversary of retirement following 12 months of receiving benefits. COLAs are either fixed at the stated rate or equal to the lesser of the stated rate and the annual increase in the CPI-U for the preceding calendar year. COLAs are not compounded each year.

⁽³⁾ Police Command and Fire receive three years Sick Pay Bonus included in FAC due to an Arbitration Award which was effective 7/1/1998. However, they do not have vacation pay-off included in FAC. Effective 1/1/2012, FAC for Police Command and Fire will not include more than 200 hours per year of overtime.

⁽⁴⁾ Effective 7/1/2009, Police Patrol will receive three years Sick Pay Bonus included in FAC, for members hired prior to 7/1/2008. However, they do not have vacation pay included in FAC. Effective 8/15/2011, FAC for Police will not include more than 200 hours per year of overtime.

⁽⁵⁾ The pension multiplier for employees hired on or after 7/1/2008 will be 2.0% of the employee's FAC for the first 15 years of service, and 2.25% for each year thereafter.

SAMPLE BENEFIT COMPUTATIONS FOR

GENERAL MEMBER RETIRING DECEMBER 31, 2015

DATA:

A.	\$45,000	Final Average Compensation
B.	32	Years of Credited Service
C.	60	Age of Retirant
D.	55	Age of Spouse
E.	100%	Percentage of Pension to Continue to Spouse after retirant's
		death (Retirant makes this choice)

COMPUTATIONS:

		Annual Amount
F.	Formula Benefit: 0.022 x 32 yrs. x \$45,000 =	\$31,680
G.	Reduction for Line E Election $(1-0.84909)*x(F) =$	4,781
H.	Benefit Payable to Retirant while Spouse is Alive: F-G	\$26,899
I.	Benefit Payable to Spouse after Retirant's Death	\$26,899
J.	Benefit Payable to Retirant after Spouse's Death	\$26,899

PROJECTED BENEFITS:

Year Ended December 31	Retirant's Benefit (Retirant & Spouse Alive)	Spouse's Benefit (After Retirant's Death)	Retirant's Benefit (After Spouse's Death)
2016	\$26,899	\$26,899	\$26,899
2017	27,437	27,437	27,437
2018	27,975	27,975	27,975
2019	28,513	28,513	28,513
2020	29,051	29,051	29,051
2021	29,589	29,589	29,589
2022	30,127	30,127	30,127
2023	30,665	30,665	30,665
2024	31,203	31,203	31,203
2025	31,741	31,741	31,741

^{*} Factors effective January 1, 2011.

In each succeeding year the amount increases by \$538 (amount may vary if CPI applies).

The benefits of elected members do not increase.

SAMPLE BENEFIT COMPUTATIONS FOR *POLICE* MEMBER RETIRING DECEMBER 31, 2015 (AND HIRED BEFORE JULY 1, 2008)

DATA:

A.	\$45,000	Final Average Compensation (FAC)
B.	30.2	Years of Credited Service
C.	55	Age of Retirant
D.	50	Age of Spouse
E.	25,000	Annuity Withdrawal at Retirement (Available if hired before 1989)
F.	100%	Percentage of Pension to Continue to Spouse after retirant's
		death (Retirant makes this choice)

COMPUTATIONS:

		Annual Amount
G.	Formula Benefit: (0.0265 x 30.2 yrs.) x \$45,000 = (Benefit is capped at 80% of FAC)	\$36,000
H.	Reduction for Annuity Withdrawal: 0.00736* x 12 x 25,000 =	2,208
I. J.	Reduction for Line F Election (1-0.88472)* x (G-H) Benefit Payable to Retirant while Spouse is Alive: G-H-I	3,896 \$29,896
K. L.	Benefit Payable to Spouse after Retirant's Death Benefit Payable to Retirant after Spouse's Death	\$29,896 \$29,896

PROJECTED BENEFITS:

Year Ended December 31	Retirant's Benefit (Retirant & Spouse Alive)	Spouse's Benefit (After Retirant's Death)	Retirant's Benefit (After Spouse's Death)
2016	\$29,896	\$29,896	\$29,896
2017	30,793	30,793	30,793
2018	31,690	31,690	31,690
2019	32,587	32,587	32,587
2020	33,484	33,484	33,484
2021	34,381	34,381	34,381
2022	35,278	35,278	35,278
2023	36,175	36,175	36,175
2024	37,072	37,072	37,072
2025	37,969	37,969	37,969

^{*} Factors effective January 1, 2011.

In each succeeding year, the amount payable increases by \$897.

SAMPLE BENEFIT COMPUTATIONS FOR *FIRE* MEMBER RETIRING DECEMBER 31, 2015 (AND HIRED BEFORE JULY 1, 2008)

DATA:

A.	\$45,000	Final Average Compensation (FAC)
B.	30.2	Years of Credited Service
C.	55	Age of Retirant
D.	50	Age of Spouse
E.	25,000	Annuity Withdrawal at Retirement (Available if hired before 1989)
F.	100%	Percentage of Pension to Continue to Spouse after retirant's
		death (Retirant makes this choice)

COMPUTATIONS:

		Annual Amount
G.	Formula Benefit: (0.0265 x 30.2 yrs.) x \$45,000 = (Benefit is capped at 80% of FAC)	\$36,000
H.	Reduction for Annuity Withdrawal: 0.00736* x 12 x 25,000 =	2,208
I. J.	Reduction for Line F Election (1-0.88472)* x (G-H) Benefit Payable to Retirant while Spouse is Alive: G-H-I	3,896 \$29,896
K. L.	Benefit Payable to Spouse after Retirant's Death Benefit Payable to Retirant after Spouse's Death	\$29,896 \$29,896

PROJECTED BENEFITS:

Year Ended December 31	Retirant's Benefit (Retirant & Spouse Alive)	Spouse's Benefit (After Retirant's Death)	Retirant's Benefit (After Spouse's Death)
2016	\$29,896	\$29,896	\$29,896
2017	30,793	30,793	30,793
2018	31,690	31,690	31,690
2019	32,587	32,587	32,587
2020	33,484	33,484	33,484
2021	34,381	34,381	34,381
2022	35,278	35,278	35,278
2023	36,175	36,175	36,175
2024	37,072	37,072	37,072
2025	37,969	37,969	37,969

^{*} Factors effective January 1, 2011.

In each succeeding year, the amount payable increases by \$897.

SAMPLE BENEFIT COMPUTATIONS FOR *HYBRID* MEMBER TERMINATING DECEMBER 31, 2015

(ASSUMES CONTINUOUS HYBRID COVERAGE FROM DATE OF HIRE)

DATA:

A.	\$28,000	Final Average Compensation
B.	10	Years of Credited Service
C.	35	Age of Member; Spouse's Age = 30
D.	\$11,200	Estimated Accumulated 4% Member Contributions

HYBRID ALTERNATIVES:

A. Take a one-time cash distribution of 1.5 times \$11,200 = \$16,800, at age 35. (Plan will not owe Member any other benefits.)

B. Leave \$11,200 in Plan until age 60:

Assume the Accumulated Member Contributions are credited with 6.5% return each year: the \$11,200 grows to \$54,070.

Choice Cash option of 1.5 times \$54,070 = \$81,105 *B1*:

No further benefits are payable

Choice Annual pension benefit = the greater of *B2*:

(a) $1.5\% \times 10 \text{ years } \times \$28,000 = \$4,200 \text{ OR}$

(b) $2 \times \$54,070 / 12.2104 = \$8,856$

plus cost-of-living adjustment* (COLA) each July 1 after one year of retirement.

Assume Member elects B2 under the Joint & 100% Survivor form of benefit and COLA rate = 2% each year:

 $$8,856 \times 0.84909 = $7,520$

PROJECTED BENEFITS:

Year Ended	Retirant's Benefit	Spouse's Benefit	Retirant's Benefit
December 31	(Retirant & Spouse Alive)	(After Retirant's Death)	(After Spouse's Death)
2040	\$7,520	\$7,520	\$7,520
2041	7,670	7,670	7,670
2042	7,820	7,820	7,820
2043	7,970	7,970	7,970
2044	8,120	8,120	8,120

In each succeeding year, the amount payable increases (in this illustration) by \$150 (amount may vary if CPI applies).

^{*} COLA rate = lesser of 2% or the rate of change in the CPI in the prior calendar year; COLA rate is applied to benefit paid the prior July 1.

[#] Factors effective January 1, 2011.

SAMPLE BENEFIT COMPUTATIONS FOR *HYBRID* MEMBER RETIRING DECEMBER 31, 2015

(ASSUMES CONTINUOUS HYBRID COVERAGE FROM DATE OF HIRE)

DATA:

A.	\$45,000	Final Average Compensation
B.	32	Years of Credited Service
C.	60	Age of Member; Spouse's Age = 55
D.	\$57,600	Estimated Accumulated 4% Member Contributions

HYBRID ALTERNATIVES:

- A. Take a one-time *cash distribution* of 1.5 times \$57,600 = \$86,400, at age 60. (Plan will not owe Member any other benefits.)
- B. Elect a *annual pension benefit* = the greater of
 - (a) $1.5\% \times 32 \text{ years } \times \$45,000 = \$21,600 \text{ OR}$
 - (b) $2 \times \$57,600 / 12.2104 = \$9,435$

plus cost of living adjustment* (COLA) each July 1 after one year of retirement.

Assume Member elects B under the Joint & 100% Survivor form of benefit and COLA rate = 2% each year:

$$$21,600 \text{ x } .84909 = $18,340$$

PROJECTED BENEFITS:

Year Ended December 31	Retirant's Benefit (Retirant & Spouse Alive)	Spouse's Benefit (After Retirant's Death)	Retirant's Benefit (After Spouse's Death)
2016	\$18,340	\$18,340	\$18,340
2017	18,707	18,707	18,707
2018	19,074	19,074	19,074
2019	19,441	19,441	19,441

In each succeeding year, the amount payable increases (in this illustration) by \$367 (amount may vary if CPI applies).

^{*} COLA rate = lesser of 2% or the rate of change in the CPI in the prior calendar year; COLA rate is applied to benefit paid the prior July 1.

[#] Factors effective January 1, 2011.

SUMMARY OF REPORTED ASSETS AS OF DECEMBER 31, 2015

The ledger balances of the Retirement System as of December 31, 2015 were reported to the actuary to total \$129,753,467, as follows:

Accounts	December 31, 2015	December 31, 2014
Reserve for Employees' Contributions		
General members	\$ 3,608,432	\$ 3,722,028
Police and Fire members	3,601,108	3,724,287
Hybrid members	1,909,185	1,776,746
Totals	9,118,725	9,223,061
Reserve for Employer Contributions		
General members	19,232,024	26,107,706
Police and Fire members	(2,364,115)	(411,678)
Hybrid members	1,924,222	3,100,190
Totals	18,792,131	28,796,218
Reserve for Retired Members' Benefits	101,560,850	97,666,365
Reserve for DROP Accounts	281,761	207,794
Reserve for Market Value Difference	0	0
Market Value of Assets	\$129,753,467	\$135,893,438

SUMMARY OF FINANCIAL AND ACTUARIAL INFORMATION

Revenues and Expenditures

	Year Ended December 31			
	2015	2014		
REVENUES:				
a. Member contributions	\$ 448,012	\$ 444,745		
b. City contributions	1,672,297	1,555,266		
c. Investment income				
1. Interest and dividends	2,011,995	2,056,830		
2. Gain or (loss) on sales	(567,167)	6,177,694		
3. Asset appreciation	8,230	0		
d. Total revenues	3,573,367	10,234,535		
EXPENDITURES:				
a. Refunds of member contributions	4,205	36,938		
b. Annuity withdrawal	0	0		
c. Retirement benefits paid	8,827,188	8,539,491		
d. Administrative expense/Miscellaneous	110,200	20,583		
e. Investment expense	771,745	888,751*		
f. Total expenditures	9,713,338	9,485,763		
RESERVE INCREASE:				
Total revenues minus total expenditures	\$(6,139,971)	\$ 748,772		

^{*} Includes Administrative expenses.

Market Value of Assets

	2015	2014
Cash	\$ 3,449	\$ 0
Receivables/Payables	(83,179)	(602,583)
Other short-term	1,892,968	1,584,824
Accrued interest and dividends	381,137	351,212
Bonds - government	11,282,409	10,609,004
- corporate	24,195,340	27,017,486
- mortgages and foreign bonds	10,537,981	10,342,664
- other bonds	0	0
Stocks - common	28,002,037	31,948,990
- preferred	0	0
- other stocks	44,251,964	46,010,108
Real estate investments	9,289,361	8,625,929
Other assets	0	5,804
Total Market Value of Assets	129,753,467	135,893,438
Increase in Assets		
From reserve increase	(6,139,971)	748,772
Unreconciled difference	0	0

In financing the accrued service costs and reserves, the ledger balances of \$129,753,467 and the funding value adjustment were applied as follows:

	Ledger Balar	nces applied to	_		
	Member Accrued Service Costs	Retirant and Beneficiary Benefits	Funding Value Adjustment	Total Assets Applied	
	Service Costs	Denents	Aujustment	Applieu	
Employees' Contributions					
General members	\$ 3,608,432	\$ 0	\$ 0	\$ 3,608,432	
Police and Fire members	3,601,108			3,601,108	
Hybrid members	1,909,185			1,909,185	
Totals	9,118,725	0	0	9,118,725	
Employer Contributions					
General members	21,560,201	(2,328,177)	2,055,314	21,287,338	
Police and Fire members	(6,264,897)	3,900,782	1,738,884	(625,231)	
Hybrid members	3,115,350	(1,191,128)	189,222	2,113,444	
Totals	18,410,654	381,477	3,983,420	22,775,551	
Retired Benefit Payments [#]		101,842,611		101,842,611	
Totals	\$27,529,379	\$102,224,088	\$3,983,420	\$133,736,887	

[#] Includes reserves for DROP accounts.

RETIRANT AND BENEFICIARY COMPARATIVE SCHEDULE

Valuation				Annual Allo	wances					epected emoved	Ratio of No.	Annual Allowances
Date		Added	F	Removed		ıd	of Year	%		Annual	Active to	as a % of
December 31	No.	Amount	No.	Amount	No.		Amount	Incr.	No.^	Amount	No. Retired	Payroll
1984	7	\$ 73,321	1	\$ 1,360	96	\$	449,365	19.1 %	3.6	\$ 9,378	2.7	6.9 %
1985	11	106,338	9	28,916	98		526,787	17.2 %	3.7	10,476	2.7	7.8 %
1986	12	183,554	3	11,946	107		698,395	32.6 %	4.2	12,260	2.4	10.1 %
1987	4	61,683	2	4,513	109		755,565	8.2 %	4.3	13,750	2.4	10.7 %
1988	10	117,976	7	31,939	112		841,602	11.4 %	4.6	16,668	2.4	10.8 %
1989	10	133,485	7	30,728	115		944,359	12.2 %	4.6	18,465	2.2	12.1 %
1990	3	21,060	4	12,468	114		952,951	0.9 %	4.8	20,352	2.4	10.5 %
1991	19	250,460	8	30,706	125		1,172,705	23.1 %	4.6	21,722	2.1	13.3 %
1992	16	297,352	6	12,939	135		1,457,118	24.3 %	4.8	23,836	1.9	15.6 %
1993	10	308,378	7	42,985	138		1,722,511	18.2 %	4.8	24,445	1.9	18.7 %
1994	8	191,304	2	8,191	144		1,905,624	10.6 %	4.7	30,636	1.8	19.7 %
1995	19	350,373	9	114,849	153		2,141,148	12.4 %	4.4	71,016	1.6	22.1 %
1996	13	213,394	10	95,392	156		2,259,150	5.5 %	4.8	79,164	1.6	22.8 %
1997	13	259,745	4	34,781	165		2,484,114	10.0 %	5.1	55,092	1.5	23.6 %
1998	10	167,935	12	203,731	163		2,448,318	(1.4)%	5.1	48,216	1.6	23.1 %
1999	14	359,489	7	87,216	170		2,720,591	11.1 %	5.9	64,332	1.5	26.0 %
2000	8	161,432	5	35,632	173		2,846,392	16.3 %	6.2	71,448	1.5	24.0 %
2001	12	322,924	7	63,269	178		3,106,047	9.1 %	6.6	76,284	1.5	26.1 %
2002	4	103,833	4	23,884	178		3,185,996	2.6 %	7.0	83,736	1.5	25.5 %
2003	14	363,172	8	163,536	184		3,385,632	6.3 %	6.1	72,516	1.3	26.9 %
2004*	20	600,971	10	115,910	194		3,870,693	14.3 %	6.6	87,156	1.2	29.7 %
2005	15	886,100	7	73,162	202		4,683,631	21.0 %	6.6	115,488	1.2	35.4 %
2006	14	323,353	6	77,574	210		4,929,410	5.2 %	6.9	126,447	1.1	37.9 %
2007	10	397,641	10	123,374	210		5,203,677	5.6 %	7.3	142,544	1.1	38.9 %
2008	34	1,438,533	2	38,940	242		6,603,270	26.9 %	8.0	162,084	0.8	58.5 %
2009	9	351,759	8	142,896	243		6,812,133	3.2 %	8.1	167,980	0.8	61.6 %
2010#	10	321,610	4	69,176	249		7,064,567	3.7 %	8.7	180,172	0.7	65.7 %
2011	16	854,874	2	44,768	263		7,874,673	11.5 %	9.4	201,591	0.6	81.7 %
2012	8	390,843	3	51,290	268		8,214,226	4.3 %	10.2	218,184	0.6	86.1 %
2013	7	274,106	8	131,955	267		8,356,377	1.7 %	10.6	235,203	0.6	87.7 %
2014	14	621,502	7	167,007	274		8,810,872	5.4 %	10.9	246,720	0.5	95.7 %
2015	11	425,743	7	108,366	278		9,128,249	3.6 %	11.0	254,883	0.6	96.4 %

^{*} Annual allowances do not include one-time adjustments made to non-COLA retirees after December 31, 2004.

[#] Annual allowances do not reflect the fixed COLA increase applied to eligible retirees, for valuation purposes.

[^] Expected number of removals in the coming year.

RETIRANTS AND BENEFICIARIES DECEMBER 31, 2015 TABULATED BY TYPE OF ALLOWANCES BEING PAID

Type of Allowances Being Paid	No.	Annual Allowances
Age and Service Allowances		
Option A allowance - benefit terminating at death of retirant	74	\$2,522,778
Option B allowance - 100% joint and survivor benefit	74	2,572,202
Option C allowance - 50% joint and survivor benefit	47	2,059,502
Option D 120 - 120 months certain and life or Option D180 - 180 months certain and life	17	606,900
Allowance to survivor beneficiary of deceased retirant	33	602,121
Total age and service allowances	245	8,363,503
Casualty Allowances		
Duty disability allowance	4	93,663
Non-duty disability allowance	18	420,829
Total Non-duty disability	22	514,492
Allowance to survivor beneficiary of deceased member		
Duty death	0	0
Non-duty death	11	250,254
Total	11	250,254
Total casualty allowances	33	764,746
Total Allowances Being Paid	278	\$9,128,249

RETIRANTS AND BENEFICIARIES DECEMBER 31, 2015 TABULATED BY AGE

	Ag	e & Service	(Casualty	Totals			
		Annual		Annual		Annual		
Ages	No. Allowances		No. Allowances		No.	Allowances		
Under 40	1	\$ 43,914	1	\$ 3,203	2	\$ 47,117		
40-44								
45-49								
50-54	10	580,654	3	104,815	13	685,469		
55-59	44	2,085,266	8	269,594	52	2,354,860		
60	8	302,966	1	18,048	9	321,014		
61	4	132,222	1	17,524	5	149,746		
62	7	230,046			7	230,046		
63	6	254,249	1	16,601	7	270,850		
64	9	398,539	1	10,145	10	408,684		
65	9	265,694			9	265,694		
66	12	486,766	1	31,294	13	518,060		
67	17	688,073	1	30,847	18	718,920		
68	4	102,703	2	31,049	6	133,752		
69	8	363,428	1	6,242	9	369,670		
70	3	167,452			3	167,452		
71	7	224,067			7	224,067		
72	4	149,414	1	19,826	5	169,240		
73	4	37,701			4	37,701		
74	8	172,936			8	172,936		
75	7	175,311			7	175,311		
76	9	205,483			9	205,483		
77	5	92,233	1	35,461	6	127,694		
78	4	89,091	1	22,021	5	111,112		
79	2	73,656	2	46,617	4	120,273		
80	9	247,351	1	18,435	10	265,786		
81	4	90,544			4	90,544		
82	2	27,887			2	27,887		
83	5	57,304	1	11,647	6	68,951		
84	5	106,165			5	106,165		
85	6	63,070	2	22,677	8	85,747		
86	4	82,856	2	44,749	6	127,605		
87	3	83,963			3	83,963		
88	5	99,588			5	99,588		
89	2	32,198			2	32,198		
90 & Over	8	150,713	1	3,951	9	154,664		
Totals	245	\$8,363,503	33	\$764,746	278	\$9,128,249		

ACTIVE MEMBERS DECEMBER 31, 2015 TABULATED BY VALUATION DIVISIONS

	Teamsters		Others		Total		
		Annualized		Annualized		Annualized	
Valuation Divisions	No.	Payroll	No.	Payroll	No.	Payroll	
General members	6	\$ 287,546	17	\$1,128,328	23	\$1,415,874	
Police and Fire members	0	0	55	3,835,651	55	3,835,651	
Water Department members	6	313,635	3	222,014	9	535,649	
Sewage Disposal members	4	207,129	4	282,451	8	489,580	
Hybrid members	0	0	68	3,192,789	68	3,192,789	
Total Active Members	16	\$ 808,310	147	\$8,661,233	163	\$9,469,543	

Also included in the valuation were 21 former members eligible for a deferred pension.

Comparative Schedule

Valuation Date December 31	Active Members						Annualized	Average			
	Gen.	P.F.	Water	Sew.	Hybrid	Total	Payroll _	Age	Service	Pay	% Inc.
1984	112	93	29	26	y	260	\$ 6,551,873	40.8	12.3	\$25,200	5.4 %
1985	113	95	29	27		264	6,791,152	40.7	12.4	25,724	2.1 %
1986	113	94	28	24		259	6,898,835	40.5	12.4	26,636	3.5 %
1987	108	90	29	25		252	7,082,224	41.1	13.1	28,104	5.5 %
1988	108	94	28	28		258	7,827,433	41.1	13.1	30,339	8.0 %
1989	101	94	30	28		253	7,787,845	41.2	13.3	30,782	1.5 %
1990	121	95	28	28		272	9,106,876	41.2	13.1	33,481	8.8 %
1991	108	92	32	29		261	8,817,472	41.1	13.1	33,783	0.9 %
1992	109	87	32	29		257	9,354,039	41.1	12.6	36,397	7.7 %
1993	110	88	30	31		259	9,190,716	41.2	13.0	35,485	(2.5)%
1994	106	87	29	31		253	9,651,905	41.8	13.4	38,150	7.5 %
1995	109	86	27	29		251	9,707,937	41.3	12.9	38,677	1.4 %
1996	106	86	27	31		250	9,923,449	41.4	12.8	39,694	2.6 %
1997	89	87	28	31	17	252	10,529,013	41.5	13.1	41,782	5.3 %
1998	80	88	27	30	29	254	10,584,003	42.2	13.2	41,669	(0.3)%
1999	76	83	25	30	35	249	10,474,154	42.7	13.2	42,065	0.9 %
2000	73	85	23	28	46	255	11,856,866	42.6	13.1	46,498	10.5 %
2001	72	85	23	28	51	259	11,906,969	43.0	13.2	45,973	(1.1)%
2002	71	87	23	27	51	259	12,514,944	43.8	13.9	48,320	5.1 %
2003	66	86	21	26	46	245	12,572,735	44.2	14.5	51,317	6.2 %
2004	60	86	21	23	52	242	13,015,922	43.9	13.9	53,785	6.2 %
2005	59	85	20	21	62	247	13,232,960	43.8	13.3	53,575	(0.4)%
2006	56	85	19	21	60	241	13,007,162	44.2	13.8	53,972	0.7 %
2007	54	82	18	21	57	232	13,371,922	45.1	14.6	57,638	6.8 %
2008	44	71	15	13	49	192	11,289,204	44.6	13.6	58,798	2.0 %
2009	41	67	14	14	53	189	11,061,644	45.2	14.1	58,527	(0.5)%
2010	37	62	13	14	54	180	10,758,097	45.9	14.7	59,767	2.1 %
2011	36	45	13	12	51	157	9,636,542	46.7	15.4	61,379	2.7 %
2012	33	50	11	12	56	162	9,543,247	46.0	14.7	58,909	(4.0)%
2013	30	50	11	12	57	160	9,524,423	46.6	15.2	59,528	1.1 %
2014	26	48	9	10	55	148	9,207,491	46.6	15.1	62,213	4.5 %
2015	23	55	9	8	68	163	9,469,543	45.3	13.2	58,095	(6.6)%

GENERAL ACTIVE MEMBERS - DECEMBER 31, 2015 BY AGE AND YEARS OF SERVICE

		Yea			Totals				
A ===	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation
Age	U-4	5-9	10-14	15-19	20-24	25-29	30 Plus	NO.	Payroll
40-44 45-49				1	1	1		1 3	\$ 54,194 228,891
50-54				1	3	2	3	9	474,877
55-59				1	2	3	1	7	436,384
60 61 64		1			1		1	1 1 1	49,155 63,984 108,389
Totals		1		3	8	6	5	23	\$1,415,874

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Age: 53.2 years

Service: 24.3 years

Annual Pay: \$61,560

POLICE ACTIVE MEMBERS - DECEMBER 31, 2015 BY AGE AND YEARS OF SERVICE

		Yea		Totals					
Age	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll
1-80			1 10 11	10 12			0 0 1 1000	2100	1 43 1 0 11
20-24	4							4	\$ 181,083
25-29	6							6	318,958
30-34	5		1					6	356,323
35-39			1	2				3	212,932
40-44			4	5				9	767,120
45-49		1		2	2			5	371,683
50-54				1	1	1		3	228,014
55-59					1	3		4	370,725
Totals	15	1	6	10	4	4		40	\$2,806,838

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Age: 38.6 years

Service: 12.2 years

Annual Pay: \$70,171

FIRE DEPARTMENT ACTIVE MEMBERS - DECEMBER 31, 2015 BY AGE AND YEARS OF SERVICE

		Yea	ars of Ser			Totals			
		- 0	40.44	1= 10			20 74	.	Valuation
Age	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Payroll
20-24	1							1	\$ 30,679
25-29	1							1	39,595
30-34	2							2	94,564
35-39	1							1	39,537
40-44			3	2				5	379,099
45-49				1	1			2	177,325
50-54			1	1	1			3	268,014
Totals	5		4	4	2			15	\$1,028,813

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Age: 40.4 years

Service: 11.5 years

Annual Pay: \$68,588

WATER DEPARTMENT ACTIVE MEMBERS - DECEMBER 31, 2015 BY AGE AND YEARS OF SERVICE

		Yea			Totals				
					Valuation				
Age	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Payroll
35-39				1				1	\$ 55,051
45-49				1	3			4	222,852
50-54					1	1		2	139,607
55-59					1	1		2	118,139
Totals				2	5	2		9	\$535,649

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Age: 49.1 years

Service: 22.8 years

Annual Pay: \$59,517

SEWAGE DISPOSAL ACTIVE MEMBERS - DECEMBER 31, 2015 BY AGE AND YEARS OF SERVICE

		Yea	rs of Ser	vice to Va	aluation I	ate			Totals		
Age	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Valuation Payroll		
45-49				1	1			2	\$146,903		
50-54					1	2		3	158,163		
55-59				1	2			3	184,514		
Totals				2	4	2		8	\$489,580		

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Age: 52.0 years

Service: 22.8 years

Annual Pay: \$61,198

HYBRID ACTIVE MEMBERS - DECEMBER 31, 2015 BY AGE AND YEARS OF SERVICE

		Yea		Totals					
									Valuation
Age	0-4	5-9	10-14	15-19	20-24	25-29	30 Plus	No.	Payroll
20-24	5							5	\$ 177,442
25-29	3							3	112,785
30-34	1							1	40,877
35-39	5	1						6	176,667
40-44	4	2	4	5				15	833,409
45-49	6	1	4	4				15	776,278
50-54	2			3				5	232,055
55-59	2		3					5	251,576
								_	
60			1	1				2	106,530
61		2	2	1	1			6	321,658
62			1					1	62,042
63		1						1	79,396
64	1							1	7,358
65	1							1	7,358
68	1							1	7,358
Totals	31	7	15	14	1			68	\$3,192,789

While not used in the financial computations, the following group averages are computed and shown because of their general interest.

Age: 46.3 years

Service: 8.1 years

Annual Pay: \$46,953

	Nun Add				Term	inations	During	Year			Active
Year	Dur	ing					Died	l-in-			Members
Ended	Ye	ar	Ret	ired	Disal	bled	Serv	ice	Otl	her	End of
December 31	A	E	A	E	A	E	A	E	A	E	Year
2001	13	9	6	4.0	0	0.5	0	0.5	3	11.2	259
2002*	7	7	2	7.2	0	0.2	0	0.2	5	3.4	259
2003	4	18	9	8.1	2	0.2	0	0.2	7	7.2	245
2004	16	19	16	7.2	0	0.3	0	0.3	3	7.2	242
2005	21	16	11	7.2	0	0.3	0	0.3	5	7.2	247
2006	8	14	9	7.9	0	0.2	1	0.2	4	2.5	241
2007	2	11	5	9.1	0	0.3	0	0.3	6	7.5	232
2008	3	43	34	8.7	0	0.3	0	0.2	9	5.6	192
2009*	4	7	3	2.6	2	0.3	1	0.2	1	4.1	189
2010	1	10	7	5.1	1	0.4	0	0.2	2	3.9	180
2011	2	25	13	5.7	0	0.4	0	0.2	12	3.1	157
2012	15	10	5	3.8	2	0.4	0	0.2	3	2.5	162
2013	9	11	3	4.1	0	0.4	1	0.2	7	4.0	160
2014	5	17	10	7.0	1	0.4	2	0.2	4	4.2	148
2015	26	11	10	8.7	0	0.3	0	0.2	1	3.7	163
15-Year Total	136	228	143	96.4	8	4.9	5	3.6	72	77.3	

^{*} Change in assumptions

DEFERRED MEMBERS

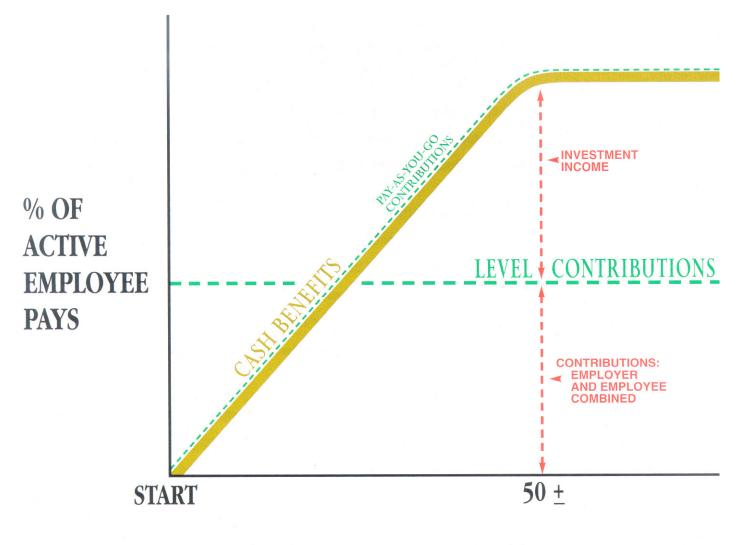
		Average
	Count	Benefit
General	6	8,560
Police	0	0
Fire	3	30,054
Hybrid	12	5,220
Total	21	9,722

[&]quot;A" denotes actual experience

[&]quot;E" denotes expected experience

SECTION C

ACTUARIAL VALUATION PROCESS, ACTUARIAL COST METHODS, ACTUARIAL ASSUMPTIONS, AND DEFINITIONS OF TECHNICAL TERMS



YEARS OF TIME

CASH BENEFITS LINE. This relentlessly increasing line is the fundamental reality of retirement plan financing. It happens each time a new benefit is added for future retirements (and happens regardless of the design for contributing for benefits).

LEVEL CONTRIBUTION LINE. Determining the level contribution line requires detailed assumptions concerning a variety of experiences in future decades, including:

Economic Risk Areas

Rates of investment return

Rates of pay increase

Changes in active member group size

Non-Economic Risk Areas

Ages at actual retirement

Rates of mortality

Rates of withdrawal of active members (turnover)

Rates of disability

THE ACTUARIAL VALUATION PROCESS

The actuarial valuation is the mathematical process by which the level contribution rate is determined, and the flow of activity constituting the valuation may be summarized as follows:

A. *Covered person data*, furnished by plan administrator.

Retired lives now receiving benefits

Former employees with vested benefits not yet payable

Active employees

- B. + Asset data (cash & investments), furnished by plan administrator
- C. + Assumptions concerning future financial experience in various risk areas, which assumptions are established by the Pension Board after consulting with the actuary
- D. + A schedule of benefits to be provided by the plan
- E. + *The funding method* for employer contributions (the long-term, planned pattern for employer contributions)
- F. + Mathematically combining the assumptions, the funding method, the benefits, and the data
- G. = Determination of:

Plan Financial Position

and/or Employer's New Contribution Rate

ACTUARIAL COST METHODS USED FOR THE DECEMBER 31, 2015 VALUATION

Normal Costs were calculated as follows:

The series of contributions payable from date of employment to accumulate the reserve of each member's projected allowance at time of retirement, death, or disability was computed using the assumptions summarized on the following pages. Each contribution in the series is a constant percentage of the member's year-by-year projected covered compensation. This method is commonly referred to as the entry-age actuarial cost method.

Actuarial Accrued Liability was computed and financed as follows:

Retirants and Beneficiaries. The actuarial present value of retirement allowances likely to be paid retirants and beneficiaries was computed using the investment return and mortality assumptions. This amount was financed by applicable actuarial assets.

Active and Inactive Members. The portion of the actuarial present value of benefits likely to be paid active and inactive members that is not covered by future normal cost contributions was computed using the assumptions outlined on the following pages. The computed amount was reduced by applicable assets.

Amortization Charges and Credits. The unfunded actuarial accrued liability is amortized over a 24 year period.

Assets were valued using a 7-year smoothing method illustrated on page A-7.

SCHEDULE OF AMORTIZATIONS FOR DEVELOPMENT OF EMPLOYER CONTRIBUTION RATES ATTRIBUTABLE TO GAINS, LOSSES, AND PLAN AMENDMENTS

	Unfunded	Amortiz	zation Years	Amortiza Charge/(C	
Description	(Overfunded)	Initial	Remaining	\$	% of Pay
GENERAL	\$ (13,183,739)	30	24	\$ (922,210)	(34.66)%
HYBRID	(1,027,499)	30	24	(69,253)	(1.99)%
POLICE	7,935,369	30	24	516,422	16.88 %
FIRE	9,950,573	30	24	 638,624	56.95 %
TOTAL	\$ 3,674,704			\$ 163,583	

ACTUARIAL ASSUMPTIONS IN THE VALUATION PROCESS

The actuary calculates contribution requirements and actuarial present values for a retirement system by applying actuarial assumptions to the benefit provisions and people information of the system, using the actuarial cost methods described on page C-3.

The principal areas of risk which require assumptions about future experience are:

- (i) long-term rates of investment return to be generated by the assets of the system
- (ii) patterns of pay increases to members
- (iii) rates of mortality among members, retirants and beneficiaries
- (iv) rates of withdrawal of active members
- (v) rates of disability among active members
- (vi) the age patterns of actual retirements

In making a valuation, the actuary calculates the monetary effect of each assumption for as long as a present covered person survives - - a period of time which can be as long as a century.

The employer contribution rate has been computed to remain level from year to year so long as benefits and the basic experience and make-up of members do not change. Examples of favorable experience which would tend to reduce the employer contribution rate are:

- (1) Investment returns in excess of 7.5 % per year.
- (2) Member terminations at a higher rate than outlined on page C-9.
- (3) Mortality among retirants and beneficiaries at a higher rate than indicated by the Mortality Table that is assumed.
- (4) Increases in the number of active members.

ACTUARIAL ASSUMPTIONS IN THE VALUATION PROCESS

Examples of unfavorable experience which would tend to increase the employer contribution rate are:

- (1) Pay increases in excess of the rates outlined on page C-8.
- (2) An acceleration in the rate of retirement from the rates outlined on page C-10.
- (3) A pattern of hiring employees at older ages than in the past.

Actual experience of the system will not coincide exactly with assumed experience, regardless of the skill of the actuary and the precision of the calculations. Each valuation provides a complete recalculation of assumed future experience and takes into account all past differences between assumed and actual experience. The result is a continual series of adjustments (usually small) to the computed contribution rate.

From time to time one or more of the assumptions are modified to reflect experience trends (but not random or temporary year-to-year fluctuations). The rationale for the assumptions used in this valuation is included in the 5-year experience study ending December 31, 2009.

ACTUARIAL ASSUMPTIONS USED FOR THE DECEMBER 31, 2015 VALUATION

Investment Return

The investment return rate assumed in the valuations was 7.5% per year, compounded annually (net after administrative expenses).

The **Wage Inflation Rate** assumed in this valuation was 3.5% per year. The Wage Inflation Rate is defined to be the portion of total pay increases for an individual that are due to macro economic forces including productivity, price inflation, and labor market conditions. The wage inflation rate does not include pay changes rated to individual merit and seniority effects.

While an exact **Price Inflation** assumption is not required to perform this valuation, we have assumed price inflation would not be lower than the fixed cost-of-living assumption (2% or 3% depending on division). A price inflation assumption on the order of 2.75% would be consistent with the other economic assumptions.

The assumed **real rate of return** over wage inflation is defined to be the portion of total investment return that is more than the assumed total wage growth rate. Considering other economic assumptions, the 7.5% investment return rate translates to an assumed real rate of return over wage inflation of 4.0%. The assumed real rate of return over price inflation would be higher – on the order of 4.75%, considering both an inflation assumption and an average expense provision.

The Active Member Population is assumed to remain constant. For purposes of financing the unfunded liabilities, total payroll is assumed to grow at the wage inflation rate -3.5% per year.

Pay increase assumptions for individual active members are shown for sample ages on page C-8. Part of the assumption for each age is for merit and/or seniority increase, and the other 3.5% recognizes wage inflation, including price inflation, productivity increases, and other macro economic forces. Changes actually experienced in average pay and total payroll have been as follows:

		,	Year Ended			3-Year	5-Year
Increase in	2015	2014	2013	2012	2011	Average	Average
Average pay	(6.6)%	4.5 %	1.1 %	(4.0)%	2.7 %	(0.4)%	(0.5)%
Total payroll	2.8 %	(3.3)%	(0.2)%	(1.0)%	(10.4)%	(0.3)%	(2.5)%

The nominal rate of return was computed using the approximate formula i = I divided by 1/2 (A + B - I), where I is recognized investment income net of expenses, A is the beginning of year funding value of assets, and B is the end of year funding value.

These rates of return should not be used for measurement of an investment advisor's performance or for comparisons with other systems -- to do so will mislead.

Pay Projections. These assumptions are used to project current pays to those upon which benefits will be based. The assumptions were first used for the December 31, 2009 valuation.

		Annual Rate of Pay Increase for Sample Ages									
	General, V	Water, Sewag	ge, Hybrid	Police - Fire							
Sample	Base	Merit &		Base	Merit &						
Ages	(Economic)	Longevity	Total	(Economic)	Longevity	Total					
20	3.5%	3.0%	6.5%	3.5%	2.3%	5.8%					
25	3.5%	2.4%	5.9%	3.5%	2.3%	5.8%					
30	3.5%	2.1%	5.6%	3.5%	2.0%	5.5%					
35	3.5%	1.9%	5.4%	3.5%	0.8%	4.3%					
40	3.5%	1.7%	5.2%	3.5%	0.2%	3.7%					
45	3.5%	1.3%	4.8%	3.5%	0.2%	3.7%					
50	3.5%	0.9%	4.4%	3.5%	0.2%	3.7%					
55	3.5%	0.5%	4.0%	3.5%	0.1%	3.6%					
60	3.5%	0.1%	3.6%	3.5%	0.0%	3.5%					
65	3.5%	0.0%	3.5%	3.5%	0.0%	3.5%					
Ref.		354			353						

If the number of active members remains constant, the total active member payroll will increase 3.5% annually, the base portion of the individual pay increase assumptions. This increasing payroll was partially recognized in amortizing unfunded actuarial accrued liabilities.

Mortality Table. The RP2000 Mortality Table. This table was first used for the December 31, 2009 valuations. The mortality table is selected by the Board of Trustees. This assumption is needed to measure the probabilities of members dying before retirement and the probabilities of each benefit payment being made after retirement. Sample values follow:

		Single Life Retirement Values									
Sample	Present V	alue of \$1	Future Life								
Attained	Monthly	for Life	Expectan	cy (Years)							
Ages	Men	Women	Men	Women							
55	\$133.68	\$138.42	26.18	28.91							
60	123.21	129.20	21.74	24.38							
65	110.73	118.12	17.61	20.12							
70	96.66	105.41	13.88	16.23							
75	81.22	91.30	10.57	12.74							
80	65.29	76.14	7.75	9.68							
Ref:	506 x 1.00	507 x 1.00									

The membership size in this group is not sufficiently large to determine if there is a margin for mortality improvements. However, based upon our experience with a broad cross section of public sector plans similar in nature to this plan, it is our opinion that there is no provision for future mortality improvement in the current mortality assumption. We recommend this table be updated with the next experience study to include additional margin for future improvement in mortality.

Rates of separation from active membership. The rates apply to members separating from active employment before retirement, death or disability. It was assumed that general, water and sewage members who quit prior to age 45 will withdraw their accumulated contributions. For Police and Fire, age 50 was assumed.

		% of Active Members Separating within Next Year									
Sample	Years of	General, Water	r,								
Ages	Service	and Se wage		Hybrid			Police			Fire	
ALL	0	24.00%		24.00%			9.60%			8.00%	
	1	16.00%		16.00%			7.20%			5.60%	
	2	12.00%		12.00%			5.60%			4.00%	
	3	8.00%		8.00%			4.00%			3.20%	
	4	5.60%		5.60%			3.60%			2.80%	
20	5 & Over	3.60%		7.20%			2.70%			2.10%	
25		3.60%		7.20%			2.70%			2.10%	
30		3.30%		6.60%			2.34%			1.74%	
35		2.64%		5.28%			1.38%			0.90%	
40		1.11%		2.22%			0.54%			0.36%	
45		0.75%		1.50%			0.30%			0.30%	
50		0.75%		1.50%			0.30%			0.30%	
55		0.75%		1.50%			0.30%			0.30%	
60		0.75%		1.50%			0.30%			0.30%	
65		0.75%		1.50%			0.30%			0.30%	
Ref.		11 x 0.	.8 11	X	0.8	29	X	0.8	30	X	0.8
		59 x 0.	.6 59	X	1.2	53	X	0.6	54	X	0.6

The rates in this table were first used in the December 31, 2009 valuation.

Rates of Disability. These assumptions represent the probabilities of active members becoming disabled.

	Percent Becoming Disabled within Next Year								
Sample	General, Water,								
Ages	Sew	age and H	ybrid	F	Police and Fi	re			
20		0.04%			0.12%				
25		0.04%			0.12%				
30		0.04%			0.12%				
35		0.04%			0.12%				
40		0.10%			0.30%				
45	0.13%				0.40%				
50		0.25%			0.74%				
55		0.45%			1.34%				
60		0.71%			2.12%				
65		0.83%			2.49%				
Ref.	9	X	0.5	9	X	1.5			

The rates in this table were first used in the December 31, 2009 valuation.

Rates of Retirement. These rates are used to measure the probabilities of an eligible member retiring during the next year.

	Percent of Active Members Retiring within Next Year* Rule of 80					
	General,					General,
Retirement	Water,					Water,
Ages	and Sewage	Appointed	Hybrid	Police	Fire	and Sewage
50				40.0%	40.0%	20.0%
51				30.0%	30.0%	20.0%
52				25.0%	25.0%	20.0%
53				25.0%	25.0%	20.0%
54				25.0%	25.0%	20.0%
55	25.0%	22.5%	20.0%	25.0%	25.0%	25.0%
56	25.0%	15.0%	20.0%	25.0%	25.0%	25.0%
57	25.0%	15.0%	20.0%	25.0%	25.0%	25.0%
58	25.0%	15.0%	20.0%	25.0%	25.0%	25.0%
59	25.0%	15.0%	20.0%	25.0%	25.0%	25.0%
60	25.0%	22.5%	40.0%	50.0%	100.0%	30.0%
61	25.0%	12.0%	40.0%	50.0%		30.0%
62	25.0%	22.5%	40.0%	50.0%		30.0%
63	25.0%	13.5%	40.0%	50.0%		30.0%
64	25.0%	22.5%	40.0%	50.0%		30.0%
65	50.0%	70.0%	40.0%	100.0%		50.0%
66	50.0%	30.0%	40.0%	1001070		50.0%
67	50.0%	40.0%	40.0%			50.0%
68	50.0%	50.0%	40.0%			50.0%
69	50.0%	60.0%	40.0%			50.0%
70	100.0%	100.0%	100.0%			100.0%
Ref.	1865	1867	1868	1869	1870	1866

^{*} Fire members and Police members hired prior to 7/1/2008, retirement rates were changed to 75% once members reach 30.2 years of service. For Police members hired on or after 7/1/2008, retirement rates were changed to 75% once members reach 37.2 years of service.

The rates in this table were first used in the December 31, 2009 valuation.

The above probabilities apply to members satisfying the conditions described on page B-5.

MISCELLANEOUS AND TECHNICAL ASSUMPTIONS DECEMBER 31, 2015

Marriage Assumption: 100% of males and 100% of females are assumed to be

married for purposes of death-in-service benefits for General and Police/Fire members. 80% of males and 70% of females are assumed to be married for purposes of death-in-service benefits for Hybrid members. Male spouses are assumed to be three years older than female spouses for active member valuation purposes. In retired or inactive cases where spouse information is needed, but not available, the three-year age

difference is also assumed.

Pay Increase Timing: Beginning of (Fiscal) year for all groups. This is equivalent to

assuming that reported pays represent amounts paid to

members during the year ended on the valuation date.

Decrement Timing: Decrements are assumed to occur mid-year.

Eligibility Testing: Eligibility for benefits is determined based upon the age

nearest birthday and service nearest whole year on the date the

decrement is assumed to occur.

Decrement Relativity: Decrement rates are used directly from the experience study,

without adjustment for multiple decrement table effects.

Decrement Operation: Disability and mortality decrements do not operate during the

first 10 years of service.

Incidence of Contributions: Contributions are assumed to be received continuously

throughout the year based upon the computed percent of payroll shown in this report, and the actual payroll payable at

the time contributions are made.

Benefit Service: Exact fractional service is used to determine the amount of

benefit payable.

Normal Form of Benefit: The assumed normal form of benefit is a straight life benefit,

except where otherwise noted.

Final Average Compensation

(FAC) Adjustment:

The normal cost and actuarial accrued liability, for age and service benefits were increased by 4% for the General and Hybrid members and 2% for the Police and Fire members to

account for inclusion of longevity, overtime pay, vacation pay, etc. in the FAC used to calculate retirement benefits.

MISCELLANEOUS AND TECHNICAL ASSUMPTIONS DECEMBER 31, 2015 (CONCLUDED)

Hybrid Benefit Election: Upon normal retirement eligibility, Hybrid members can

choose the Monthly Benefit Option or the Lump Sum Option. For valuation purposes, it was assumed that 80% of members would elect the Monthly Benefit Option and 20% would elect

the Lump Sum Option.

Upon deferred retirement eligibility, Hybrid members can choose the Immediate Option or the Deferred Option. For valuation purposes, it was assumed that 30% would elect the Immediate Option and 70% would elect the Deferred Option.

Option Factors: Option factors are based upon 7.5% interest and the RP2000

Mortality table with a 90% Unisex Blend. The Annuity Withdrawal reduction factor is based upon 7.50% interest and

the RP2000 Mortality table with a 50% Unisex Blend.

City of Monroe Employees Retirement System

DEFINITIONS OF TECHNICAL TERMS

Accrued Service. Service credited under the system which was rendered before the date of the actuarial valuation.

Actuarial Accrued Liability. The difference between the actuarial present value of system benefits and the actuarial present value of future normal costs. Also referred to as "past service liability."

Actuarial Assumptions. Estimates of future experience with respect to rates of mortality, disability, turnover, retirement, rate or rates of investment income and salary increases. Decrement assumptions (rates of mortality, disability, turnover and retirement) are generally based on past experience, often modified for projected changes in conditions. Economic assumptions (salary increases and investment income) consist of an underlying rate in an inflation-free environment plus a provision for a long-term average rate of inflation.

Actuarial Cost Method. A mathematical budgeting procedure for allocating the dollar amount of the "actuarial present value of future benefits" between future normal costs and actuarial accrued liability. Sometimes referred to as the "actuarial funding method."

Actuarial Equivalent. One series of payments is said to be actuarially equivalent to another series of payments if the two series have the same actuarial present value.

Actuarial Gain (Loss). The difference between actual unfunded actuarial accrued liabilities and anticipated unfunded actuarial accrued liabilities -- during the period between two valuation dates. It is a measurement of the difference between actual and expected experience.

Actuarial Present Value. The amount of funds currently required to provide a payment or series of payments in the future. It is determined by discounting future payments at predetermined rates of interest, and by probabilities of payments.

DEFINITIONS OF TECHNICAL TERMS

Amortization. Paying off an interest-discounted amount with periodic payments of interest and (generally) principal -- as opposed to paying off with a lump sum payment.

Credited Projected Benefit. The portion of a member's projected benefit attributable to service before the valuation date - allocated based on the ratio of accrued service to projected total service and based on anticipated future compensation.

Normal Cost. The portion of the actuarial present value of future benefits that is assigned to the current year by the actuarial cost method. Sometimes referred to as "current service cost."

Unfunded Actuarial Accrued Liabilities. The difference between actuarial accrued liabilities and valuation assets. Sometimes referred to as "unfunded past service liability" or "unfunded supplemental present value."

Most retirement systems have unfunded actuarial accrued liabilities. They arise each time new benefits are added and each time an actuarial loss occurs.

The existence of unfunded actuarial accrued liabilities is not in itself bad, any more than a mortgage on a house is bad. Unfunded actuarial accrued liabilities do not represent a debt that is payable today. What is important is the ability to amortize the unfunded actuarial accrued liabilities and the trend in its amount (after due allowance for devaluation of the dollar).

Valuation Assets. The value of cash, investments and other property belonging to a pension plan, as used for the purpose of an actuarial valuation.

PUBLIC EMPLOYEE RETIREMENT INVESTMENT ACT ACT 729 OF 2002 REQUIRED EMPLOYER CONTRIBUTIONS

Sec. 20m. The governing board vested with the general administration, management, and operation of a system or other decision-making body that is responsible for implementation and supervision of any system shall confirm in the annual actuarial valuation and the summary annual report required under section 20h(2) that each plan under this act provides for the payment of the required employer contribution as provided in this section and shall confirm in the summary annual report that the system has received the required employer contribution for the year covered in the summary annual report. The required employer contribution is the actuarially determined contribution amount. An annual required employer contribution in a plan under this act shall consist of a current service cost payment and a payment of at least the annual accrued amortized interest on any unfunded actuarial liability and the payment of the annual accrued amortized portion of the unfunded principal liability. For fiscal years that begin before January 1, 2006, the required employer contribution shall not be determined using an amortization period greater than 40 years. For years that begin after December 31, 2005, the required employer contribution shall not be determined using an amortization period greater than 30 years. In a plan year, any current service cost payment may be offset by a credit for amortization of accrued assets, if any, in excess of actuarial accrued liability. A required employer contribution for a plan administered under this act shall allocate the actuarial present value of future plan benefits between the current service costs to be paid in the future and the actuarial accrued liability. The governing board vested with the general administration, management, and operation of a system or other decision-making body of a system shall act upon the recommendation of an actuary and the board and the actuary shall take into account the standards of practice of the actuarial standards board of the American Academy of Actuaries in making the determination of the required employer contribution.

SECTION D FINANCIAL REPORTING

NOTE: GASB Statements No. 67 and No. 68 are effective for Governmental Retirement Plans for the fiscal year beginning after June 15, 2013 (GASB Statement No. 67) and the fiscal year beginning after June 15, 2014 (GASB Statement No. 68). These statements replace GASB Statements No. 25 and No. 27.

SUPPLEMENTARY INFORMATION SCHEDULE OF FUNDING PROGRESS (DOLLAR AMOUNTS IN THOUSANDS)

Actuarial Valuation Date December 31	Actuarial Value of Assets (a)	Actuarial Accrued Liability (AAL) Entry Age (b)	Unfunded (Overfunded) AAL (b)-(a)	Funded Ratio (a)/(b)	Covered Payroll (c)	UAAL as a Percent of Covered Payroll [(b)-(a)]/(c)
2002	¢ 110.752	¢ 96 265	¢ (24.297)	120 2 07	¢ 10.572	
2003	\$ 110,752	\$ 86,365	\$ (24,387)	128.2 %	\$ 12,573	-
2004	111,524	98,058	(13,466)	113.7 %	13,016	-
2005	118,935	101,937	(16,998)	116.7 %	13,233	-
2006	124,033	105,394	(18,639)	117.7 %	13,007	-
2007	130,366	110,753	(19,613)	117.7 %	13,372	-
2008	130,512	117,030	(13,482)	111.5 %	11,289	-
2009	131,184	120,828	(10,356)	108.6 %	11,062	-
2010	132,119	124,415	(7,704)	106.2 %	10,758	-
2011	131,234	128,991	(2,243)	101.7 %	9,637	-
2012	130,063	130,741	678	99.5 %	9,543	7.1 %
2013	130,300	132,708	2,408	98.2 %	9,524	25.3 %
2014	130,057	136,238	6,181	95.5 %	9,207	67.1 %
2015	133,737	137,412	3,675	97.3 %	9,470	38.8 %

SCHEDULE OF EMPLOYER CONTRIBUTIONS

Fiscal Year July-June	Annual Required Contribution				
2003-2004	\$ 0				
2004-2005	0				
2005-2006	479,028				
2006-2007	487,016				
2007-2008	1,444,879				
2008-2009	1,439,268				
2009-2010	1,483,539				
2010-2011	1,191,553				
2011-2012	1,274,568				
2012-2013	1,351,541				
2013-2014	1,488,154				
2014-2015	1,622,379				
2015-2016	1,695,874				
2016-2017	1,845,799				
2017-2018	1,830,651				

SUMMARY OF ACTUARIAL METHODS AND ASSUMPTIONS

The information presented in the supplementary schedules was determined as part of the actuarial valuations at the dates indicated. Additional information as of the latest actuarial valuation follows:

Valuation date December 31, 2015

Actuarial cost method Entry age actuarial cost method

Amortization method Level percent-of-pay

Amortization period 24 years, closed

Asset valuation method 7-year smoothed market

Actuarial assumptions

Investment rate of return 7.5%

(includes wage inflation at 3.5%)

Cost-of-living adjustments 3% simple for Police Unit

2% simple for Police Unit after 7/1/2008

3% simple for Fire Unit

2% simple for Fire Unit after 7/1/2008

2% simple for Hybrid members

2% simple for General



June 7, 2016

City of Monroe Employees Retirement System Clerk's Office 120 East First Street Monroe, Michigan 48161-2169

Attn: Mr. Edward Sell

Enclosed please find 15 copies of the report of the Seventy-First Annual Actuarial Valuation of the City of Monroe Employees Retirement System as of December 31, 2015.

We would be glad to meet with the Board to discuss this report at their convenience.

Sincerely,

Mark Buis, FSA, EA, MAAA

MB:bd Enclosure